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Descriptive Index of Methods and  
Machines for Highway Construction



DESCRIPTIVE INDEX OF METHODS AND MACHINES  
FOR HIGHWAY CONSTRUCTION

BY

WALTER EMCH

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THESIS

for the Degree of  
BACHELOR OF SCIENCE

IN

CIVIL ENGINEERING

---

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1920



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U N I V E R S I T Y   O F   I L L I N O I S

College of Engineering

Feb. 2, 1920.

This is to certify that the thesis prepared under my immediate direction by MR. WALTER EMCH, entitled "DESCRIPTIVE INDEX OF METHODS AND MACHINES FOR HIGH-WAY CONSTRUCTION," is approved by me as fulfilling this part of the requirements for the Degree of Bachelor of Science in Civil Engineering.

Ira O. Baker.  
Professor of Civil Engineering

Approved:

F. L. Newell  
Head of Department of Civil Engineering

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PREFACE  
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The great advances in the science of road-making during the past decade have been accompanied by a vast amount of literature. The continual invention of new methods of construction, new machines, and new materials, has made the task of keeping reference books and texts up to date an almost impossible one. Large amounts of very valuable information are found widely scattered thru the pages of technical journals and periodicals. For this reason the author believes that a classified index of subject-matter will be of great assistance to anyone interested in road-making.

Many small and unimportant items whose subject-matter is contained in more comprehensive articles were intentionally omitted.

The index has been arranged and classified under the following ten heads:

- I. Earth Roads
- II. Concrete Roads
- III. Concrete Pavements
- IV. Brick Pavements
- V. Asphalt Pavements
- VI. Asphaltic-Concrete Pavements
- VII. Wood-Block Pavements
- VIII. Stone-Block Pavements
- IX. Road Machinery
- X. Contractor's Hints



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Each article, except the last two, is divided into four parts, (1) Construction Methods, (2) Construction Equipment, (3) Labor Organization, and (4) Cost Data. Article X contains information concerning (1) methods of accounting, (2) hints on the management of men, (3) data on depreciation, etc.

In the compilation of this index the author has analyzed the following publications:

Engineering and Contracting, a weekly magazine published in Chicago, 1912 to 1919 inclusive.

Engineering News-Record, a weekly magazine published in New York City, 1916 to 1919 inclusive.

Engineering News, a weekly magazine published in New York City, 1912 to 1915 inclusive.

Engineering Record, a weekly magazine published in New York City, 1912 to 1915 inclusive.

Municipal Engineering, a monthly magazine published in Indianapolis, 1912 to 1919 inclusive.

Good Roads, a weely<sup>k</sup> journal published in New York City, 1912 to 1919 inclusive.<sup>^</sup>

Concrete, a monthly magazine published in Detroit, 1912 to 1919 inclusive.

Dependable Highways, a monthly magazine published in Cleveland, 1912 to 1919 inclusive.

Urbana, Illinois, January, 1920.



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D E S C R I P T I V E I N D E X

O F

M E T H O D S A N D M A C H I N E S

F O R

H I G H W A Y C O N S T R U C T I O N

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I. EARTH ROADS.

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1. CONSTRUCTION METHODS.

Earth-road building-methods and machines, described in  
1000-word illustrated article.

Eng. and Cont., Aug.7,1918,p.155,Vol.50.

Earth-road construction-methods and costs, described in  
2200-word illustrated article.

Eng.News, April 16,1914,p.821,Vol.71.

Earth haulage, selection of hauling machinery, discussed in  
1400-word article.

Eng. and Cont.,Feb.16,1915,p.157,Vol.43.

Earth excavating and hauling, discussed in 2700-word article.

Eng. and Cont., May 2, 1917,p.402,Vol.47.

Earth moving methods in road construction, discussed in  
1200-word article.

Eng. and Cont., April 2,1919,p.343, Vol.51.



Exclusive use of grading machine in side-hill cuts, described in 500-word illustrated article.

Eng. News-Rec., Oct. 25, 1917, p. 809, Vol. 79.

## 2. CONSTRUCTION EQUIPMENT.

Equipment for earth-road construction, described in 1000-word article.

Eng. and Cont., April 2, 1919, p. 343, Vol. 51.

Types of earth hauling equipment, discussed in 1400-word article.

Eng. and Cont., Feb. 17, 1915, p. 157, Vol. 43.

Construction-machinery for earth roads, described in 1000-word illustrated article.

Eng. and Cont., Aug. 7, 1918, p. 155, Vol. 50.

\$3000.00 contractors equipment suitable for earth-road construction, described in 600-word article.

Eng. and Cont., March 6, 1918, p. 250, Vol. 49.

## 3. COST DATA.

Relative costs of various types of hauling machinery, discussed in 1400-word article.

Eng. and Cont., Feb. 17, 1915, p. 157, Vol. 43.

Construction-costs of earth-roads, described in 2200-word illustrated article.

Eng. News, April 16, 1914, p. 821, Vol. 71.

Haulage-costs, discussed in 500-word article.

Eng. and Cont., July 4, 1917, p. 7, Vol. 48.





## II. CONCRETE ROADS.

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### 1. CONSTRUCTION METHODS.

Concrete-road construction-methods and materials, described in 1000-word illustrated article.

Mun.Eng., Jan., 1918, p.12, Vol.14.

Method of constructing concrete road during freezing temperatures, described in 1500 word article.

Eng. and Cont., Aug. 7, 1918, p.147, Vol.50.

Machine finishing for concrete roads, described in 1000-word illustrated article.

Mun.Eng., Aug., 1917, p.48, Vol.53.

Construction of concrete highway with modern machinery and methods, described in 2000-word illustrated article.

Mun.Eng., June, 1915, p.328, Vol.48.

Concrete-road building-methods in 1916, described in 1800-word illustrated article.

Concrete, Feb., 1917, p.53, Vol.10.

Concrete-road construction-method, described in 400 words of 1200-word illustrated article.

Eng. and Cont., Feb. 3, 1915, Vol.43, p.107.

Construction-methods and costs of concrete road, described in 600-word illustrated article.

Eng. and Cont., Aug. 12, 1914, p.160, Vol.52.





Concrete-road construction-methods in marsh-land, methods of overcoming difficulties, described in 1500-word illustrated article.

Mun.Eng.,May,1915,p.312,Vol.48.

Construction-methods described in 650 words of 2000-word illustrated article.

Eng. and Cont.,Sept.1,1915,p.168,Vol.44.

Concrete-road building-methods in1918, outstanding features of construction, described in 2500-word article.

Concrete,May,1918,p.160,Vol.12.

Construction-methods used on 131 miles of concrete-road, described in 900-word illustrated article.

Eng. and Cont.,March 10,1915,p.227,Vol.43.

Construction of concrete road described in 2500-word article.

Eng. and Cont.,March 3,1915,p.203,Vol.43.

Construction-methods used on 30-mile piece of concrete-road described in 1000-word article.

Concrete,Feb.,1916,p.54,Vol.8.

Concrete-road construction on large scale, described in 1600-word illustrated article.

Concrete,Sept.,1915,p.99,Vol.7.

Water supply-methods for road construction work, described in 200 words of 3500-word article.

Eng.and Cont.,Nov.11,1914,p.457,Vol.20.



Water supply methods for construction of concrete-roads, described in 700-word article.

Eng. and Cont., May 26, 1915, p. 467, Vol. 43.

Water supply for the construction of 131 miles of concrete-road, described in 100 words.

Eng. and Cont., March 10, 1915, p. 227, Vol. 43.

Finishing concrete-road surface by roller method, described in 400-word article.

Eng. and Cont., Nov. 7, 1917, p. 374, Vol. 48.

Belt-finishing on concrete roads, described in 200 words.

Eng. and Cont., Oct. 4, 1916, p. 303, Vol. 46.

Belt-finishing, economy effected thereby, described in 500-word illustrated article.

Eng. and Cont., Nov. 1, 1916, p. 382, Vol. 46.

Rolling concrete surface with gas-pipe, economy effected thereby, described in 500-word illustrated article.

Eng. News-Rec., Nov. 29, 1917, p. 1029, Vol. 79.

Hauling of materials for concrete-highway construction, described in 2000-word article.

Concrete, March, 1916, p. 105, Vol. 8.

## 2. CONSTRUCTION EQUIPMENT.

Central mixing-plant for 5-mile concrete-road, described in 1000-word illustrated article.

Concrete, Aug., 1918, p. 46, Vol. 13.



Construction-plant for concrete-road, described in detail in 2500-word illustrated article.

Mun.Eng.,May,1918,p.180,Vol.14.

Equipment for the construction of concrete roads, described in article of 500 words.

Eng. and Cont., Feb.6, 1918,p.139,Vol.49.

Construction-plant for concrete-roads, described in 2000-word illustrated article.

Mun.Eng.,April,1918,p.135,Vol.14.

Pneumatic mixing and conveying machine, described in 300-word illustrated article.

Eng.and Cont.,Sept.27,1916,p.287,Vol.46.

Concrete mixer, mounted on trolley-Car, for paving between tracks, described in 500-word illustrated article.

Eng.News,Feb.10,1916,p.276,Vol.75.

Concrete mixer specially adapted to paving, described in 300-word illustrated article.

Eng. and Cont.,Oct.4,1916,p.309,Vol.46.

Automatic water-measuring device for concrete mixers, described in 300-word illustrated article.

Eng. and Cont.,Feb.3,1915,p.111,Vol.43.

Concrete mixer of 14 cu.ft. capacity, steam driven, with boom and bucket discharge, described in 300-word article.

Eng. and Cont.,April 7,1915,p.326,Vol.43.





Comparitive values of steam and gasoline driven concrete-mixers, described in 600-word article.

Eng. and Cont., May 19, 1915, p. 444, Vol. 43.

Portable mixer-loader, described in 300-word article.

Eng. and Cont., May 1, 1918, p. 443, Vol. 49.

Sand and gravel washing-plant, capacity of 100 tons per 10-hour day, described in 600-word illustrated article.

Eng. and Cont., July 15, 1914, p. 71, Vol. 42.

Portable gravel-washing machine, equipped with 2 1/2 H.P. gasoline motor, described in 350-word illustrated article.

Eng. and Cont., Nov. 11, 1914, p. 470, Vol. 52.

Bins for stone and sand, described in 300-word illustrated article.

Eng. News, Jan. 13, 1916, p. 76.

Finishing-machine (Baker), described in 400-word article.

Eng. and Cont., Dec. 9, 1914, p. 550, Vol. 52.

Loading and unloading devices, see "Machinery".

Tractors and motor trucks, see "Machinery".

Industrial railways, see "Machinery".

### 3. LABOR ORGANIZATION.

Construction-organizations for concrete-roads, described in 500 words.

Eng. and Cont., Sept. 1, 1915, p. 168, Vol. 54.





Crew-organization and its performance, well described in 1500-word illustrated article.

Eng. and Cont., May 1, 1918, p. 427, Vol. 49.

Crew-organization for construction of concrete-roads, described and discussed in 500-word article.

Eng. and Cont., Feb. 6, 1918, p. 139, Vol. 49.

Labor maintenance on concrete-road construction, described in 500 words of a 3500-word article.

Eng. and Cont., Nov. 11, 1914, p. 457, Vol. 52.

#### 4. COST DATA.

Costs of road construction-plant, described in 2000-word illustrated article.

Mun. Eng., April, 1918, p. 135, Vol. 14.

Reduction of labor-costs in concrete mixing, discussed in 600-word article.

Eng. and Cont., May 1, 1918, p. 436, Vol. 49.

Labor-costs entering the construction of concrete-roads, described in 1500-word illustrated article.

Eng. and Cont., May 1, 1918, p. 427, Vol. 49.

Construction-costs of concrete-roads, described in 600-word article.

Eng. and Cont., Aug. 12, 1914, Vol. 52.



Costs of equipment and labor, described in 500-word article.

Eng. and Cont., Feb. 6, p. 139, 1918, Vol. 49.

Cost of road-construction in Southern California, described in 1200-word illustrated article.

Costs of concrete roads, described in detail in 500-word article.

Eng. and Cont., Sept. 23, 1914, p. 304, Vol. 52.

Costs of concrete-road-construction, itemized in 300 words.

Eng. and Cont., Feb. 3, 1915, p. 107, Vol. 53.

Cost of construction-equipment, described in 500-word article.

Eng. and Cont., Sept. 1, 1915, p. 168, Vol. 44.

Concrete-road-costs, described in 2500-word article.

Eng. and Cont., March 3, 1915, p. 203, Vol. 43.

Rates of depreciation of equipment, see "Hints for Contractors"

Contractors' overhead costs, see "Hints for Contractors".

Cost accounting, see "Hints for Contractors".



## III. CONCRETE PAVEMENTS.

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## 1. CONSTRUCTION METHODS.

Construction-methods and devices used in concrete pavements, described in 2000-word article.

Eng. and Cont., March 7, 1917, p. , Vol. 47.

Methods used in the construction of 40000 sq. yds. of concrete pavement, described in 1200-word article.

Eng. and Cont., May 19, 1915, p. 444, Vol. 43.

Methods of construction and of obtaining water for concrete-pavements, discussed in 600 words of extensive article on road construction.

Eng. and Cont., Feb. 10, 1915, p. 114, Vol. 43.

Construction-details, described in 500-word article.

Eng. and Cont., Feb. 10, 1915, p. 114, Vol. 43.

Time-studies in placing of forms, mixing and handling of concrete, finishing, described in 1500-word article.

Eng. and Cont., Jan. 20, 1915, p. 59, Vol. 43.

Method of storing materials for concrete pavements, described in 150-word article.

Eng. and Cont., Feb. 10, 1915, p. 114, Vol. 43.

Hauling materials for concrete-pavement construction, described in 300 words of extensive article on construction methods.

Eng. and Cont., Feb. 10, 1915, p. 114, Vol. 43.





Finishing concrete by roller-method, described in 600-word illustrated article.

Eng. and Cont., Oct. 3, 1917, p. 266, Vol. 48.

Finishing concrete with belt, described in 400-word article.

Mun. Eng., Aug. 1917, p. 48, Vol. 53.

## 2. CONSTRUCTION EQUIPMENT.

Grout-mixer for concrete pavements, equipped with 2-1/2 H.P. Gasoline engine, described in 200-word article.

Devices used in constructing concrete pavements, described in 2000-word article.

Eng. and Cont., March 7, 1917, p. 229, Vol. 47.

Construction-equipment, see "CONCRETE ROADS", also "ROAD MACHINERY".

## 3. LABOR ORGANIZATION.

Concrete-paving organization, described in 2500-word article.

Eng. and Cont., 1914, p. 553, Vol. 41.

Crew-organization for construction of reinforced concrete pavements, described in 1200-word article.

Eng. and Cont., Aug. 26, 1914, p. 213, Vol. 42.

Crew-organization for constructing concrete pavements, described in 1300-word article.

Eng. and Cont., Feb. 18, 1914, p. 208, Vol. 41.

Labor-organization, see also "CONCRETE ROADS".





#### 4. COST DATA.

Costs of constructing concrete pavement, itemized in 700 words.

Mun.Eng, Jan.1917, p.27, Vol.52.

Cost data on concrete paving, described in 800-word article.

Eng. and Cont., Feb.10, 1915, p.119, Vol.43.

Construction-costs of concrete pavement, described in 1800-word illustrated article.

Eng. and Cont., Oct.21, 1914, p.393, Vol.42.

Cost of constructing concrete pavement, itemized in 600 words.

Eng. and Cont., March 6, 1918, p.247, Vol.49.

Method of estimating cost of concrete pavement, for the special use of the contractor, described in 400-word article.

Eng. and Cont., Aug.25, 1915, p.148, Vol.44.

Cost data, see also "CONCRETE ROADS".

Cost accounting, see "HINTS FOR CONTRACTORS".

Contractor's overhead costs, see "HINTS FOR CONTRACTORS".

Rates of depreciation of equipment, see "HINTS FOR CONTRACTORS".



## IV. BRICK PAVEMENTS.

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## 1. CONSTRUCTION METHODS.

Brick paving-methods, described in 2000-word illustrated article.

Eng. and Cont., June 10, 1914, p. 676, Vol. 41.

Brick-pavement construction-methods, described in detail in 7000-word article.

Mun. Eng., Oct. 1916, p. 124, Vol. 51.

a. Brick-pavement construction-methods, described in 2000-word article.

Eng. and Cont., March 7, 1917, p. 232, Vol. 47.

Brick-road construction, described in 1200-word illustrated article.

Eng. and Cont., Dec. 9, 1914, p. 533, Vol. 42.

Method used in constructing brick-pavement on steep grades, described in 1800-word illustrated article.

Mun. Eng., Feb. 1915, p. 105, Vol. 48.

Methods of grouting brick-pavements, described in 700-word article.

Eng. and Cont., Oct. 20, 1915, p. 302, Vol. 44.

Method of grouting brick-pavements, described in 1000-word article.

Eng. and Cont., Dec. 6, 1916, p. 502, Vol. 46.



Common errors in construction of brick-pavements, described in 1500-word article.

Eng. and Cont., Dec.9,1914,p.533,Vol.42.

## 2. CONSTRUCTION EQUIPMENT.

Plant used for the construction of brick-pavements, described in 600-word illustrated article.

Mun.Eng.,Jan.,1918,p.11,Vol.14.

Equipment for the construction of brick-pavements, described in 1200-word article.

Eng. and Cont.,Dec.9,1914,p.533,Vol.42.

Grouting-machine for use in construction of brick-pavements, described in 500-word article.

Mun.Eng.,April,1915,p.281,Vol.48.

Grout-mixer for use in construction of brick-pavements, described in 300-word illustrated article.

Eng. and Cont., Jan.3,1917,p.20,Vol.47.

Construction equipment, see also "ROAD MACHINERY", and "CONCRETE ROADS".

## 3. LABOR ORGANIZATION.

Crew-organization for brick paving, described in 500-word illustrated article.

Mun.Eng.,Dec.,1917,p.251,Vol.53.

Crew-organization for brick paving, described in 350-word article.

Eng.and Cont.,July 4,1917,p.1,Vol.48.





## V. ASPHALT PAVEMENTS.

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## 1. CONSTRUCTION METHODS.

Construction-method for asphalt-pavement, described in  
1500-word illustrated article.

Mun.Eng., July, 1918, p.9, Vol.15.

Construction-method for asphalt-pavement, described in  
1200-word illustrated article.

Eng. and Cont., Jan.2, 1918, p.7, Vol.49.

Construction-details in asphalt paving, described in 1400  
words of 4000-word article on design and Construction.

Eng. and Cont., July 3, 1918, p.9, Vol.50.

Construction-method for asphalt-pavement, described in  
5000-word article.

Mun.Eng., May, 1917, p.226, Vol.52.

Methods of constructing asphalt wearing-surfaces, described  
in 300-word article.

Eng. and Cont., Aug.18, 1915, p.131, Vol.44.

Methods of constructing asphalt-block pavements, described  
in 1500-word article.

Eng. and Cont., July 8, 1914, p.43, Vol.42.

Methods of building bituminous-concrete-roads, described in  
2000-word illustrated article.

Eng.News, Vol.71, p12. Jan.1, 1914.





Various methods of constructing asphalt-pavements, described in 6000-word article.

Mun.Eng., April, 1917, p.164, Vol.52.

Method of constructing bituminous-pavement, described in 4000-word article.

Eng. News, May, 1914, p.1174, Vol.71.

## 2. COSTRUCTION EQUIPMENT.

Types of asphalt-mixing plants, described in 6000-word article.

Mun.Eng., April, 1917, p.164, Vol.52.

Asphalt-mixing plant and crew of the Williston Construction Company, described in 900-word illustrated article.

Mun.Eng., Feb., 1917, p.73, Vol.52.

Asphalt-mixing plant of portable type, described in 500-word illustrated article.

Eng. and Cont., Sept. 16, 1914, p.282, Vol.42.

Asphalt-mixing plant of portable type, described in 500-word article.

Eng. News, May 18, 1916, p.968, Vol.73.

Small asphalt-mixing plant, described in 400-word illustrated article.

Eng. and Cont., Dec. 9, 1914, p.549, Vol.42.

Machinery used for asphalt paving, described in 600-word illustrated article.

Eng. and Cont., April 3, 1918, p.343, Vol.49.



Equipment used in the construction of bituminous-pavements, described in 4000-word article.

Eng. News, May, 1914, p. 1174, Vol. 71.

Sand-spreader for use in the construction of asphalt-pavements, described in 250-word illustrated article.

Eng. and Cont., Oct. 14, 1914, p. 371, Vol. 42.

Construction-equipment, see also "ROAD MACHINERY".

### 3. LABOR ORGANIZATION.

Organization of men used in constructing asphalt-pavements, described in 300-word article.

Eng. and Cont., Jan. 2, 1918, p. 7, Vol. 49.

Construction-crew used for building asphalt-pavements, described in 600-word illustrated article.

Eng. and Cont., April 3, 1918, p. 343, Vol. 49.

Labor organization for asphalt-pavement construction, described in 600-word illustrated article.

Eng. and Cont., July 5, 1916, p. 18, Vol. 46.

### 4. COST DATA.

Cost analysis of various types of bituminous-pavements, described in detail in 2000 words of extensive article on cost analysis.

Eng. and Cont., Jan. 14, 1914, p. 83, Vol. 41.

Cost data on asphalt-pavements, described in 600-word article.

Eng. and Cont., July 5, 1916, p. 18, Vol. 46.



### 3. COST DATA.

Costs of brick-pavement, itemized in 500-word article.

Eng. and Cont., Aug. 4, 1915, p. 88, Vol. 44.

Costs of brick-pavement, itemized in 400-word article.

Mun. Eng., Dec. 1917, Vol. 53.

Costs of brick-pavement, described in 400-word article.

Eng. and Cont., April 15, 1914, Vol. 41, p. 446.

Methods of cost-analysis of brick-pavements, described in detail in 2000 words of 6000-word article.

Eng. and Cont., Jan. 14, 1914, p. 83.

Cost of grouting brick-pavements, described in 300-word article.

Eng. and Cont., Oct. 20, 1915, p. 302, Vol. 44.

Cost of grouting, described in 150 words of 1000-word article on the grouting of brick pavements.

Eng. and Cont., Dec. 6, 1916, p. 502, Vol. 46.

Methods of figuring cost of brick-pavements, described in 500-word article.

Eng. and Cont., Aug. 18, 1915, p. 132, Vol. 44.

Cost of laying brick, described in 350-word article.

Eng. and Cont., July 4, 1917, p. 1, Vol. 48.

Cost accounting, see "HINTS FOR CONTRACTORS".

Contractor's overhead costs, see "HINTS FOR CONTRACTORS".

Rates of depreciation of equipment, see "HINTS FOR CONTRACTORS".





Cost of asphalt wearing-surfaces, itemized in 500-word article.

Eng. and Cont., Aug. 18, 1915, p. 131, Vol. 44.

Cost of asphaltic-concrete-pavement, itemized in 400-word article.

Mun. Eng., Dec., 1917, p. 249, Vol. 53.

Cost of operating asphalt mixing-plant, described in 1000-word article.

Eng. and Cont., June 6, 1917, p. 512, Vol. 47.

Cost of operating asphalt mixing-plant, itemized in 300-word article.

Eng. and Cont., March 7, 1917, p. 239, Vol. 47.

Cost accounting, see "HINTS FOR CONTRACTORS".

Contractors' overhead costs, see "HINTS FOR CONTRACTORS".

Rates of depreciation of equipment, see "HINTS FOR CONTRACTORS".



## VI. ASPHALTIC-CONCRETE PAVEMENTS.

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## 1. CONSTRUCTION METHODS.

Construction-methods used in building asphaltic-concrete pavement, described in 800-word illustrated article.

Eng. and Cont., April 3, 1918, p. 343, Vol. 49.

Construction-methods used in building asphaltic-concrete pavements, described in 2000-word article.

Mun. Eng., Feb., 1916, p. 103, Vol. 50.

## 2. CONSTRUCTION EQUIPMENT.

Equipment used for constructing asphaltic-concrete pavement, described in 600-word article.

Eng. and Cont., April 3, 1918, p. 343, Vol. 49.

## 3. LABOR ORGANIZATION, see "ASPHALT PAVEMENTS".

## 4. COST DATA.

Cost of constructing asphaltic-concrete pavements, described in 300 words.

Eng. and Cont., April 3, 1918, p. 344, Vol. 49.

Cost data, see also "ASPHALT PAVEMENTS".

Cost accounting, see "HINTS FOR CONTRACTORS".

Contractors' overhead costs, see "HINTS FOR CONTRACTORS".

Rates of depreciation of equipment, see "HINTS FOR CONTRACTORS".



## VII. WOOD BLOCK PAVEMENTS.

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## 1. CONSTRUCTION METHODS.

Method of constructing wood-block pavements, described in  
450-word article.

Eng. and Cont., Oct. 20, 1915, p. 302, Vol. 44.

Method of constructing wood-block pavements, described in  
1800-word article.

Eng. and Cont., Feb. 4, 1914, p. 152, Vol. 41.

## 2. CONSTRUCTION EQUIPMENT, see "ROAD MACHINERY".

## 3. COST DATA.

Cost of wood-block pavements, itemized and described in  
3500-word article.

Eng. and Cont., Dec. 8, 1915, p. 441, Vol. 44.

Cost of wood-block pavement, described in 300-word article.

Eng. and Cont., Oct. 20, 1915, p. 302, Vol. 44.

Cost accounting, see "HINTS FOR CONTRACTORS".

Contractor's overhead costs, see "HINTS FOR CONTRACTORS".

Rates of depreciation of equipment, see "HINTS FOR CONTRACTORS"





# VIII. STONE-BLOCK PAVEMENTS.

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## 1. CONSTRUCTION METHODS.

Method of constructing stone-block pavement, described in detail in 3000-word article.

Mun.Eng., Jan., 1917, p.2, Vol.52.

Construction of granite-block pavement, described in 1200-word article.

Mun.Eng., Sept., 1916, p.92, Vol.51.

Method of constructing granite-block pavement, described in 500-word article.

Eng. and Cont., Nov.3, 1915, p.350, Vol.44.

Methods of constructing granite-block pavements, described in 2000-word article.

Eng. and Cont., Oct.14, 1914, Vol.42.

Details in the construction of granite-block pavements, described in 2200word illustrated article.

Mun.Eng., July, 1918, p.3, Vol.55.

## 2. COST DATA.

Cost of grouting stone blocks, described in 220-word article.

Eng.and Cont., Nov.3, 1915, p.350, Vol.44.

Cost accounting, see "HINTS FOR CONTRACTORS".

Contractor's overhead costs, see "HINTS FOR CONTRACTORS".

Rates of depreciation of equipment, see "HINTS FOR CONTRACTORS".



## IX. ROAD MACHINERY.

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## 1. TRACTORS AND MOTOR TRUCKS.

30-H.P. gasoline tractor specially designed for road construction purposes, described in 400-word illustrated article.

Eng. and Cont., Aug. 12, 1914, p. 166, Vol. 42.

Gasoline tractor with dust-proof running parts, described in 300-word article.

Eng. and Cont., Jan. 14, 1914, p. 91, Vol. 41.

Motor truck embodying special features adapted to road construction, described in 300-word article.

Eng. and Cont., Jan. 30, 1918, p. 125, Vol. 49.

Self-dumping motor truck, described in 200-word article.

Eng. and Cont., Jan. 30, 1918, p. 113, Vol. 49.

The utility of motor trucks in road-construction, discussed in 1200-word article.

Eng. and Cont., Dec. 9, 1914, p. 535, Vol. 42.

## 2. INDUSTRIAL RAILWAYS.

Industrial railway used in constructing roads, described in 300-word article.

Eng. and Cont., March 10, 1915, p. 227, Vol. 43.

Industrial equipment used in constructing 160 miles of hard road, described in 600-word article.

Eng. News-Rec, April 5, 1917, p. 23, Vol. 77.



The use of industrial equipment in constructing highways, described in 500-word illustrated article.

Eng. and Cont., Nov. 7, 1917, p. 363, Vol. 48.

Industrial equipment and its cost, described in 900-word article.

Concrete, May, 1919, p. 199, Vol. 14.

The use of industrial equipment in road-construction, described in 400-word illustrated article.

Eng. and Cont., Sept. 9, 1914, p. 258, Vol. 42.

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Eng. and Cont., Nov. 11, 1914, p. 457, Vol. 42.

Cost of operating industrial-equipment, described in 500-word illustrated article.

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### 3. MATERIAL CONVEYORS.

Brick conveyor, of the gravity type, described in 600-word article.

Mun. Eng., March, 1917, p. 136, Vol. 52.

Brick conveyor, of gravity type, described in 200-word article.

Eng. News, Jan. 22, 1914, p. 183, Vol. 71.





### 3. DEVICES FOR LOADING AND UNLOADING MATERIALS.

Wagon-loader for use in unloading railroad cars, described in 300-word article.

Eng. and Cont., Sept. 2, 1914, p. 238, Vol. 42.

Machine for unloading stone, described in 500-word illustrated article.

Mun. Eng., Aug., 1916, p. 76, Vol. 51.

Home-made unloading device of real merit, described in 600-word illustrated article.

Eng. News-Rec., Aug. 30, 1917, p. 425, Vol.

### 4. EARTH-HANDLING MACHINERY.

Self-loading excavator of ingenious design, described in 400-word illustrated article.

Eng. and Cont., Jan. 30, 1918, p. 114, Vol. 49.

Road grader and scarifier, described in 300-word illustrated article.

Eng. News, Feb. 4, 1915, p. 240, Vol. 73.



## X. CONTRACTOR'S HINTS.

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Suggestions in the choice of road-machinery, substance of 2000-word article.

Eng. and Cont., June 4, 1919, p. 605, Vol. 51.

Utility and comparative costs of various types of road-machinery, described in 1400-word article.

Mun. Eng., Jan., 1919, p. 19, Vol. 16.

The average life, and depreciation rates of road-building equipment, described in 600-word article.

Eng. and Cont., Jan. 3, 1917, p. 3, Vol. 47.

Depreciation of contractor's plant and equipment, discussed in 2000-word article.

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Contractor's overhead costs, well described and discussed in 1800-word article.

Eng. and Cont., April 10, 1918, p. 364, Vol. 49.

Contract prices on State Aid Roads, discussed in 400-word article.

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Methods advisable to use, described in 2000-word article.

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Cost-accounting system for road contractors, described in 3000-word article.

Eng. and Cont., June 23, 1915, Vol. 43.





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